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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,271	11/14/2003	Douglas Don Fitzpatrick	28549-198484	7946
26694	7590	10/18/2005		
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20045-9998			EXAMINER SHINGLETON, MICHAEL B	
			ART UNIT 2817	PAPER NUMBER

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/712,271

Applicant(s)

FITZPATRICK ET AL. 

Examiner

Michael B. Shingleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10-28 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) 1, 4, 6-8, 10, 20, 24, 27, 28 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 3, 5, 11-19, 21-23, 25, 26, 32 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

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### DETAILED ACTION

Applicant's election without traverse of Group IV in the reply filed on August 5, 2005 is acknowledged. Applicant states that claim 31 is directed toward the elected invention. This is incorrect for claim 31 recites that there is a unbalanced input that receives the input UWB waveform yet the UWB waveform is balanced as shown in Figure 8 also claim 31 recites that the "first output UWB waveform is output the first unbalanced output" and the "second output UWB waveform is output the second unbalanced output" which does not meet Figure 8. Note that the input to the cross-over switch where the first and second output UWB waveforms occur is balanced thus these are not unbalanced outputs. Thus claim 31 is drawn to the non-elected invention.

### *Specification*

The disclosure is objected to because of the following informalities: Applicant incorrectly terms the structure of Figure 3 from Gupta et al., 1979 as a "balun". The structure of Figure 3 is a phase shifter and also note that the input is unbalanced as is the output. There is a single input and a single output terminal which commonly means that these terminals are with respect to some reference voltage, i.e. they are unbalanced. Thus there is no conversion from balanced to unbalanced or from unbalanced to balanced and thus it would be repugnant to the usual meaning of the term "balun" to say that Figure 3 of the specification, i.e. Gupta et al. of 1979 is a balun. Page 14 of the instant specification recites that Figure 7 uses the device of Figure 4, however, that is not what is shown in Figure 7. Figure 7 shows six transmission lines with two inputs and two outputs. The device of Figure 4 only has two transmission lines, one slot line and three terminals. The device of Figure just does not match up with the structure shown in Figure 7.

Appropriate correction is required.

### *Drawings*

Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the UWB antenna must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be

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necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 3, 11, 13, 15, 17-19, 21, 23, 25, 26, 32 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Logothetis 5,867,072 (Logothetis) as evidenced by Brown et al. "Lines, Waves and Antennas" (Brown).

Figures 1-2c and the relevant text of Logothetis discloses a bi-phase modulator having a so called "symmetrical transformation device" that includes a so called "symmetrical transformation device" 9 that converts the energy of the input waveform into energy of a first output and a second output (Note terminals 14 and 16.). The waveforms of Logothetis have to be substantially identical and 180 degrees apart so as to provide for an accurate transformation of the unbalanced input to a balanced output. This is supported by Brown. Note that Brown states that 180 degrees phase shift is needed to drive the other wire of a parallel long wire in a balun arrangement. If these two signals in Logothetis were not substantially identical waveforms 180 degrees apart then the difference between these two signals would not reproduce a waveform having the same general shape as the unbalanced signal. The diodes 3A-D form the so called "selector device". The selector device of Logothetis operates in exactly the same manner as that of applicant's (Note column 4 around lines 9 and 20). Element 11 of Logothetis forms another "symmetrical transformation device" whose output is that of the first output, i.e. 0 degrees or that of the second output, i.e. 180 degrees. Which phase the output signal takes is clearly dependent on an information signal DATA<sub>IN</sub>. Claims like claims 18 and 19 are very broad were numerous interpretations of the Logothetis reference can meet these claim limitations. Note that in one interpretation that the transmission lines 4A and 5A are input transmission lines that are clearly coupled to output transmission lines 4B and 5B whereas lines 4B and 5B have a common node "o". These lines are clearly coupled otherwise a balanced output could not be obtained. Claims like claim 3 are very broad were numerous interpretations of the Logothetis reference can meet these claim limitations. Note that in one interpretation that the

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transmission lines 4A and 5A are balanced and coupled to unbalanced transmission lines 2A and 2B. Note the "center tapped" arrangement in element 11 to a differential device 6A and 6B wherein the primary is center tapped at 12 and the secondary is center tapped at "o".

Note that column 4 around line 32 of Logothetis states: "This particular embodiment may be used for carrier waves having frequencies between approximately 3 GHz and approximately 26 GHz". This clearly includes as UWB carrier wave. Note that a UWB carrier wave can have a bandwidth of 500 MHz which is well within the 23 GHz bandwidth as noted above. Furthermore, the invention of Logothetis is fully capable of operating with a UWB signal. Additionally, applicant has not specifically defined the term UWB. Applicant defines the term UWB in an opened ended manner in the paragraph bridging pages 9 and 10 of the instant application. Here applicant recites "any signal having a relative bandwidth greater than or equal to 10% or defined as a UWB signal by communication rules and/or regulations of a governmental agency". A relative bandwidth greater than or equal to 10% of what? Is it 10% of the center carrier frequency? Also governmental agency rules or regulations are subject to change and there are many governmental agencies out there. It is very possible that some countries have not rewritten their rules and regulations and UWB maybe defined as having a bandwidth of less than 50kHz. Again these rules and regulations can be rewritten and what is UWB today in one country may not be what is UWB in the future. Also even if the two conditions above were specific, what would be the bandwidth if the "any signal having a relative bandwidth greater than or equal to 10%" and the "defined as a UWB signal by communication rules and/or regulations of a governmental agency" do not match? Which one would apply??? Thus applicant's definition is not specific and therefore the RF input signal of Logothetis is considered a UWB signal given the broadest reasonable interpretation of this term consistent with the specification.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 5, 12, 14, 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logothetis 5,867,072 (Logothetis) as evidenced by Brown et al. "Lines, Waves and Antennas" (Brown).

The reasoning as applied above and the following:

Claims like 12 and 14 recite that the output device is a differential UWB antenna. Logothetis is silent on the output device. Nevertheless, as one of ordinary skill in the art would have known, a differential UWB antenna/balun combination is a conventional load for an RF circuit such as Logothetis.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a differential UWB antenna/balun combination as the load for the circuit of Logothetis because as the Logothetis reference is silent on the exact RF load one of ordinary skill in the art would have been motivated to use any art-recognized equivalent RF load such as the differential UWB antenna/balun combination conventionally known in the art. Claims like claim 16 recites that the "channel signal" is in accordance with a time hopping code. There is no specific definition for "channel signal" and thus given the broadest reasonable interpretation this signal is seen as a data signal. If this was different from a data signal then when the scope of claim 15, which claim 16 depends, is limited to just the data signal there is no antecedent basis for the channel signal of claim 16 and it would not make sense to discuss a channel signal (claim 16) when there is no such signal. The data signal of Logothetis is digital and the output is digital, i.e. it is either zero degrees or 180 degrees. Thus Logothetis outputs digital code. Logothetis is not specific on what information the digital code represents. However, one well-known information signal that is conventionally known to be produced by an RF circuit is digital signal that contains a time hopping code.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the output signal of Logothetis to output a time hopping code because as the Logothetis reference is silent on the exact use of the RF circuit one of ordinary skill in the art would have been motivated to use the RF signal to transmit any digital code such as a time hopping code.

Claims like claim 5 recites that the transmission lines have tapers. It is conventionally known to provide taper so as to match impedance. Logothetis is silent on the taper of the transmission lines.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the transmission lines of Logothetis with a taper so as to provide for match impedancing as is well known in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571) 272-1770.

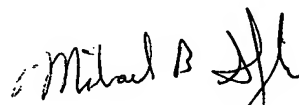
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 and after July 15, 2005 the fax number will be 571-273-8300. Note that old fax number (703-872-9306) will be service until September 15, 2005.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS

October 08, 2005

A handwritten signature in black ink, appearing to read "Michael B Shingleton", with a stylized flourish at the end.

Michael B Shingleton  
Primary Examiner  
Group Art Unit 2817